

BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of)	
)	
)	
Amendment of Parts 2 and 95 of)	ET Docket No. 99-255
the Commission's Rules to Create a)	
Wireless Medical Telemetry Service)	
)	

REPLY OF
FINAL ANALYSIS COMMUNICATION SERVICES, INC.

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SUMMARY

The record in this proceeding does not support the Commission's proposal to allocate 14-15 MHz of spectrum on a primary basis in the 608-614 MHz bands and bands around 1.4 GHz to a new Wireless Medical Telemetry Service ("WMTS").

The medical telemetry parties have failed to provide objectively verifiable and factual analyses of actual market demand and use of medical telemetry equipment that would justify such a generous allocation. Instead, the record demonstrates that the stated needs of the medical telemetry parties may be met more than adequately through more efficient use and careful coordination of spectrum currently available for use by medical telemetry on a secondary basis, as well as the possible allocation of some spectrum on a primary use basis in the 608-614 MHz band. Any additional allocations are not presently justified and may cause harmful interference to, or be adverse to the interests of, other parties, including the interests of the Non-Voice Non-Geostationary Mobile Satellite Service ("NVNG MSS") industry in feeder link spectrum in certain bands proposed to be allocated to WMTS.

Consequently, the Commission should approve the medical telemetry parties' request for "grandfathered" manufacture and use of medical telemetry equipment for use in the on a secondary basis in all existing bands, but should subject such approval to the conditions that: (i) an expeditious schedule be implemented for the transitions necessary to resolve the mobile services "refarming" proceeding in the 450-470 MHz bands and to implement digital TV spectrum assignments; (ii) a frequency use database and coordination process be implemented as soon as possible; and (iii) medical telemetry equipment design and deployment be held to stringent standards of maximum spectral efficiency.

To the extent that, even after implementation of the spectrum efficiency and coordination measures in existing bands, additional and/or primary spectrum for WMTS is justified by objectively verifiable and representative market demand and use analyses, the Commission should allocate such spectrum in the 608-614 MHz bands as has been so justified. The record establishes that such an allocation in the 608-614 MHz bands may be made without adverse consequences for other interested parties.

The record clearly does not support the allocation of any additional spectrum to WMTS in this proceeding. The medical telemetry parties have not yet made factual and verifiable demonstrations that additional and/or different spectrum from that allocated in the 608-614 MHz band is required for specific authorized applications. In the event such a demonstration is made, the Commission should first allocate such spectrum in the 1394-1400 MHz band as has been demonstrated to be required. In the event that any demonstration is made that even more or different spectrum is required, the Commission should allocate spectrum in either the 1427-1429 MHz or 1432-1435 MHz bands.

Commenters agree that the Commission should ensure that all operations of medical telemetry equipment, in whatever spectrum bands and whether on a secondary or primary basis, are conducted over equipment designed for maximum spectral efficiency and are monitored through an effective frequency coordination process.

The record is clear that no allocations of spectrum to WMTS in the 1390-1393 MHz or 1429-1432 MHz bands are justified and should be avoided due to harmful interference to potential uses for feeder links of frequencies in the 1390-1393 MHz and 1429-1432 MHz bands by NVNG MSS.

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Final Analysis Communication Services, Inc. ("Final Analysis"), by its attorneys, files this Reply to the comments on the Notice of Proposed Rulemaking, FCC 99-182 (rel. July 16, 1999) ("Notice") in the above referenced proceeding.¹ In the Notice, the Commission has proposed two options for the establishment of service rules for a new "Wireless Medical Telemetry Service" ("WMTS") and the allocation of 14 or 15 MHz of spectrum on a primary basis under two alternative options: Option 1 – (608-614 MHz, 1395-1400 MHz and 1429-1432 MHz) and Option 2 (608-614 MHz and 1394-1400 MHz).

As described in detail below, the record does not support the allocation of spectrum to WMTS under either option. Instead, the comments clearly indicate that the reasonable needs of the medical telemetry parties can be addressed through more efficient use and better coordination of current spectrum, along with the allocation of 6 MHz of additional spectrum on a co-primary basis in the 608-614 MHz band. The medical telemetry industry should be required to demonstrate actual spectrum needs before any allocation beyond 608-614 MHz is made. If the

¹ As noted in its initial comments, as a licensee in the Non-Voice Non-Geostationary Mobile Satellite Service ("NVNG MSS"), Final Analysis has a direct interest in this proceeding.

Commission finds that additional spectrum is justified, both the medical telemetry industry and Final Analysis each have proposed a compromise allocation in the same general bands which fully satisfies medical telemetry's request without harming the NVNG MSS industry.

I. INTRODUCTION

Final Analysis strongly supports the efforts being made by the Commission to address the request by the American Hospital Association Task Force on Medical Telemetry (the "AHA Task Force") for spectrum free from harmful interference to medical telemetry devices. Final Analysis also appreciates the Commission's attempt to achieve a solution for medical telemetry that accommodates the requirements and interests of a number of other parties, including the NVNG MSS industry, in which Final Analysis is a licensee.

It is clearly very important to ensure adequate interference protection for medical telemetry operations. However, regardless of the obvious appeal of medical applications, in this proceeding as in all other spectrum allocation matters, the Commission must make reasonable judgments regarding competing interests based strictly upon factual considerations of empirically demonstrated spectrum requirements, assurances of spectrum efficiency, and assessments of the feasibility of various sharing arrangements. Specific public policy issues often raise important considerations, but should not override the factual basis for making sound spectrum allocation decisions in the public interest. This is increasingly important when available spectrum for competing uses is increasingly scarce. Thus, in discharging its public interest duty to all current and future licensees, the Commission must use a "sharp pencil," and ensure that allocations are not excessive or wasteful.

In this context, Final Analysis certainly does not begrudge the medical telemetry parties any new allocations that are truly needed and justified. However, it is apparent in this

proceeding that neither the AHA Task Force nor the other medical telemetry parties have provided the justification that the Commission requires to conclude, on the basis of a factual record, that the requested and proposed allocations to WMTS are justified by demonstrated need. This is in contrast to the extensive technical information and justification that other parties, specifically including the NVNG MSS licensees, have placed on the record in support of their competing interests in the subject spectrum bands. Consequently, on the basis of the record before it, a decision by the Commission to adopt either Option 1 or Option 2 would be arbitrary and capricious.

Instead, Final Analysis recommends an approach which should serve as a useful compromise. Specifically, Final Analysis urges the Commission to allow continued manufacture and use of medical telemetry equipment in the current Part 15 and Part 90 spectrum, as the medical telemetry parties have requested, subject to the transitions necessary to permit the final implementation of a solution in the land mobile “refarming” proceeding as well as the implementation of digital TV. As part of this compromise, however, the medical telemetry parties must conform current secondary use to stricter standards and procedures to ensure spectrally efficient design and deployment of equipment as well as closer monitoring of frequency use and coordination to prevent interference. These modest steps alone should go far to address the needs articulated by the AHA Task Force for better protection from interference.

The fact that many of the parties in the medical telemetry community themselves support continued operation in current bands with implementation of frequency use monitoring and databases along with effective coordination to reduce potential interference in existing spectrum directly undercuts arguments that medical telemetry requires such a large amount of additional spectrum. Final Analysis proposes that the Commission require the medical telemetry parties to

produce much more detailed and verifiable justification for the allocation of any additional spectrum. That being said, however, Final Analysis understands the desire for spectrum in which medical telemetry can operate on a co-primary basis. It appears that the spectrum requested in the 608-614 MHz band can suit this purpose. The commenters in this proceeding nearly universally support the allocation to WMTS of up to 6 MHz of additional spectrum on a primary or co-primary basis in the 608-614 MHz band. Final Analysis also notes that from the record it appears that, as a low power operation, medical telemetry operations may be a “benign” neighbor to radio astronomy in this band, and allowing two uses of the same bands promotes efficient spectrum use.

Although other spectrum may be allocated to WMTS without harm to other parties, particularly in parts of the 1394-1400 MHz band, no additional allocations are actually justified by the record at this time. Final Analysis respectfully urges the Commission not to make any such allocations which would be plainly wasteful and unwarranted.

Most importantly, there is no justification on the record for the allocation to WMTS of any of the proposed NVNG MSS feeder link spectrum at 1390-1393 MHz and 1429-1432 MHz as contemplated in Option 1 and Option 2. The request by the medical telemetry parties for spectrum overlapping these bands is based only on the most speculative future possible uses whereas, in contrast, the NVNG MSS industry, as well as the United States government, have identified this spectrum after years of intensive effort and technical analysis as the only possible spectrum in which an international allocation might be achieved for critically needed NVNG MSS feeder links. Moreover, the medical telemetry industry itself argues that it cannot share this spectrum with NVNG MSS. Therefore, under these circumstances, any allocation of spectrum in these bands to WMTS would harm the NVNG MSS industry and would not represent reasoned

decision-making, particularly where a different mutually agreeable compromise for the satisfaction of any additional demonstrated spectrum requirements has been outlined by each of the parties (*i.e.*, in the 1394-1400 MHz and/or 1427-1429 MHz bands).

II. THE RECORD DOES NOT SUPPORT THE COMMISSION'S PROPOSED SPECTRUM ALLOCATION TO WMTS

A. The Medical Telemetry Industry Has Never Demonstrated An Actual Need For A Particular Amount of New Spectrum

The medical telemetry industry has completely failed to justify an actual need for the 12 MHz of spectrum originally requested with any type of objective, detailed analysis. Consequently, the proposed allocation of 14 to 15 MHz of spectrum to WMTS is wholly unsupported. In fact, quite to the contrary, the comments in this proceeding demonstrate that the immediate and foreseeable spectrum requirements for a primary allocation for WMTS are quite modest and easily can be accommodated in no more than 6 MHz for the foreseeable future.

First, it is abundantly apparent that the initial request by the AHA Task Force was based upon woefully deficient information. The AHA Task Force's studies are not only inadequate in that they survey only fourteen hospitals, but are extremely biased in that the facilities tested are among the largest in the nation, which necessarily have larger spectrum needs and reflect more coordination burdens. Final Analysis agrees with the Personal Communications Industry Association, Inc. ("PCIA") that a nationwide allocation cannot reasonably be based on the average demand of these fourteen institutions.² Moreover, as Final Analysis indicated in its Comments, the survey conducted by AHA of these institutions did not even attempt to assess objective measures of actual demand and usage. PCIA strongly concurs, pointing out that "[it] is extremely difficult to believe that such an enormous amount of spectrum (the breadth of two

² PCIA at 4.

television channels) is necessary in even the most urban areas.”³ Similarly, the American Mobile Telecommunications Association (“AMTA”), observes that the 12 MHz proposed by the AHA Task Force is “roughly equivalent to the entire non-Public Safety Part 90 allocation in the 450-470 MHz band.”⁴

Further, PCIA’s comments describe AHA’s reluctance to develop effective coordination procedures such that less overall spectrum would be required and to develop a reliable measurement of actual spectrum use. PCIA notes that it has repeatedly offered to assist AHA by contacting medical facilities to determine actual usage, assembling a database consisting of medical facilities and frequencies utilized and preparing journal articles and lectures to educate the healthcare industry on the FCC’s rule changes.⁵ According to PCIA, the medical telemetry industry has not accepted these offers, preferring to rely on an ad hoc survey, rather than developing an actual model of current usage. This decision by the AHA Task Force has most likely had the effect of inflating the actual spectrum required.

The initial comments filed by the medical telemetry parties do nothing to fill the void. Instead, the medical telemetry parties merely repeat their request for an expansive allocation based upon estimates of possible and desired future uses. The comments of AHA are phrased entirely in terms of *potential* needs. For example, the AHA Task Force justifies its request for at least two separate bands, as opposed to one contiguous band, by stating:

Future technological advances likely will accelerate the need for reliable two-way command and control telemetry applications on WMTS systems, and the Commission’s upper band spectrum to WMTS should accommodate this need.⁶
(emphasis added)

³ PCIA at 4.

⁴ AMTA at 4, note 6.

⁵ PCIA at 3.

⁶ AHA Task Force at 9.

In particular, the AHA Task Force states that its survey revealed that within 10 years medium to large hospitals will utilize, on average, 1,000 devices. The AHA Task Force's comments, however, neglect to address such issues as whether spectrum sharing is possible between these devices, exactly how many channels these 1,000 devices will occupy, and how far the channels should be separated or offset.⁷ The AHA Task Force proposal leaps from a need for spectrum, based on an inflated estimate of 1,000 devices per hospital, to a request for 12 MHz of spectrum to meet this need without any real explanation of how those devices create such a large demand. Such an assumption of gross spectrum requirements without even an initial analysis of the ability of medical telemetry devices to reuse spectrum efficiently is simply not credible, and should not be accepted by the Commission as a valid statement of spectrum needs. Overall, the AHA Task Force approach completely ignores the fact that spectrum is scarce and that, in other cases where there are competing uses for spectrum, the Commission demands that spectrum requests be well justified and realistic.

Final Analysis adamantly disagrees with ITT Research Institute's comments which assert, without any support, that the methodology and assumptions used by the Physiologic Parameters Workgroup in estimating future WMTS spectrum requirements are sound.⁸ In contrast, Final Analysis finds the Workgroup's methodology to be seriously deficient. It completely omits any reference to the assumptions made regarding essential operational use parameters such as the number of terminals that can be used per floor, whether frequencies can be reused on adjacent floors, and the average frequency and duration of transmissions. These

⁷ AHA Task Force at 4-5.

⁸ ITT Research Institute at 1.

obvious considerations do not appear to have been factored into the Workgroup's findings, and therefore its conclusions are highly questionable.

Additionally, it is important to distinguish the request of such parties as the Department of Health and Human Services, expressed in comments filed by the Health Resources and Services Administration's Office for the Advancement of Telehealth ("OAT") and the Food and Drug Administration's Center for Devices and Radiological Health ("CDRH"), for spectrum in excess of 12 MHz for "telemedicine" and "homecare" as well as medical transport applications.⁹ These applications include such services as long distance monitoring of patients, telemedicine and video conferencing for patients located several miles from a medical facility, video/telemedicine transmissions to a health care facility from an ambulance, and video link-ups between a nurse and a patient in his or her home. Such requests reflect an inappropriately overbroad view of medical telemetry and are well outside the context of this proceeding.

The Commission should clarify that, regardless of the merit of such applications, they are not necessarily appropriate uses of the medical telemetry equipment which is the subject of this proceeding. Medical telemetry is a narrowly targeted, in-building, low power service. It is not the exclusive service for medicine-related communications, and should not be viewed as the sole communications method for all medical applications. Second, many of the services identified by OAT and CDRH are broadband-type services, including voice and video, which the Commission appropriately has determined would occupy too much of the available WMTS spectrum and would be a form of "wireless intercom" not encompassed by the intended purpose of medical telemetry to transmit vital patient data.¹⁰ The types of medical applications described by OAT

⁹ OAT at 1-2; CDRH at 4.

¹⁰ Notice at para. 33.

and CDRH are not wireless medical telemetry and are more appropriately delivered by non-WMTS technologies. In any event, these services exist today and are delivered by a variety of radio services or via the Internet. There are a number of other communications services which can be relied upon for these applications. Third, the Commission already has properly determined that some of these applications, particularly for medical transport, should not be approved for WMTS.¹¹ Therefore, comments proposing an expanded purpose for WMTS should be disregarded.

Finally, and most importantly, comments advocating increased spectrum allocations highlight a major difficulty with this proceeding, namely that neither the AHA Task Force proposal nor the Commission's Notice have adequately taken into account all of the spectrum currently available for medical telemetry. As clearly laid out in the comments, there is a great deal of spectrum currently being used for medical telemetry beyond the bands identified by the AHA Task Force or even mentioned in the Notice, specifically in the ISM (industrial, scientific and medical) bands (902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz). Although this spectrum is used on a secondary basis, and although certain frequencies cannot be used in some locations due to potential interference, the fact remains that altogether medical telemetry has the ability to operate within a range of approximately 500 MHz of spectrum. The Commission should expressly acknowledge that, even for those applications already considered appropriately encompassed within medical telemetry, a very substantial allocation has already been made.¹² A much more thorough and rigorous analysis of the uses of the existing spectrum must be made

¹¹ The Commission was careful to point out that it proposed adoption of the AHA Task Force's eligibility restrictions, under which "a health care facility would not include an ambulance or other moving vehicle." Notice at para. 28.

¹² As referenced in the Notice at para. 7, changes to Part 15 of the rules were just made in 1997 to allow medical telemetry operations in TV channels 14-46 (470-668 MHz).

before speculative future medical applications, some of which are not even appropriately considered medical telemetry, are used to expand it even more.

B. Grandfathering and Efficient Coordination of Existing Spectrum Significantly Reduces WMTS Spectrum Requirements

1. The Medical Telemetry Parties' New Request For Continued Use of Current Spectrum Belies Their Claimed Need for Additional Spectrum

Not only have the medical telemetry parties failed to provide any concrete justification for an allocation of any particular amount of additional spectrum, but their initial comments completely contradict their assertion that entirely new spectrum is required to avoid life threatening interference. The medical telemetry parties now ask that they be allowed to continue to use, indefinitely, equipment designed for operation in the very Part 15 and Part 90 frequencies that they have previously seemed so desperate to avoid.

Specifically, the AHA Task Force originally clearly implied, and the Commission clearly understood, that over a reasonable transition period nearly all medical telemetry operations would be moved to newly allocated spectrum. In fact, the Commission has expressly indicated that it wants to encourage users to “migrate out of the digital and PLMR bands as quickly as possible.”¹³ While the Commission has stated that equipment already in operation after the proposed two year transition may continue to operate in the DTV and PLMR bands, such operations would clearly be at the “users’ own risk.”¹⁴ The Commission apparently did not contemplate, and did not understand the AHA Task Force to have proposed, that new equipment approved after the transition period be permitted to be designed for and used in the existing Part 15 and Part 90 bands. Thus, the grandfathering provisions proposed by the AHA Task Force in

¹³ See Notice at para. 41.

¹⁴ *Id.*

its comments constitute a completely different approach, and require an entirely different calculus of spectrum need.

In particular, it appears that the AHA Task Force no longer believes that it faces an urgent need to vacate the Part 15 and Part 90 frequencies to prevent any immediate or palpable life-threatening interference. Instead, the AHA Task Force now takes a diametrically opposed position with the following requests:

- That “only newly designed devices that are first subject to an equipment authorization after the second anniversary of a decision allocating new frequencies to WMTS must be capable of operating in the newly allocated spectrum....” and that “such newly designed devices also may be capable of operating in the currently authorized Part 15 or Part 90 frequencies,”
- That “continued use of any device that was lawfully manufactured and in operation by the transition deadline should be ‘grandfathered’ permanently;”
- That the “continued manufacture of any wireless telemetry device that was lawfully manufactured prior to the expiration of the transition period also should be grandfathered, even if the device lacks the capability of operating in the WMTS bands; and
- That devices lawfully operating under Parts 15 or 90 prior to the transition deadline which merely are being re-authorized to reflect minor modifications...should not be considered “newly designed” and also should be grandfathered for continued manufacture and operation outside the WMTS bands.”¹⁵ (Emphasis added).

These comments demonstrate the desire of some manufacturers to continue manufacturing and operating current devices permanently and to avoid ever having to design equipment capable of operating in newly allocated spectrum.

Moreover, the AHA Task Force makes the astonishing argument that:

the Commission should allow the marketplace, not regulatory mandates, to drive the transition of wireless telemetry devices to the new Part 95 frequencies. If users continue to demand medical telemetry equipment operating outside the Part 95 frequencies,

¹⁵ AHA Task Force at 22-24. The exact same arguments are made by MedStar Health Corporation at 13-15.

because DTV or PLMR deployments have not yet created unacceptable interference, the Commission should not stand in the way of such market forces.¹⁶ (Emphasis added.)

The transition of medical telemetry to new spectrum was not the Commission's idea, it was the AHA Task Force's idea. Similarly, any inefficient use of spectrum as a result of this proceeding will not be a result of regulatory mandates that "stand in the way of market forces," but will arise only if the medical telemetry parties do not adequately justify their request for additional spectrum.

In addition to the AHA Task Force's request that medical telemetry operations continue to be permitted in Part 15 and Part 90 frequencies permanently, other parties unexpectedly have requested that medical telemetry operations continue to be permitted in other bands. Specifically, Symbol Technologies, Inc. argues that its ISM band devices are "extremely reliable" and low cost, and that a transition out of these bands is not necessary.¹⁷ Although apparently the ISM devices operate using spread spectrum, Symbol Technologies notes that new narrowband operations may be possible in these bands also. Although the availability of the ISM bands for medical telemetry operations surprisingly was not taken into account by the AHA Task Force or in the Notice, the Commission should count the spectrum already available in these bands when considering medical telemetry spectrum needs.

Together, the modified requests of the medical telemetry parties in their comments constitute an egregious expansion of their already excessive spectrum request. In essence, the medical telemetry parties are asking that both the use and manufacture of equipment designed to operate in the Part 15, Part 90 and ISM bands be permitted to continue indefinitely. If these

¹⁶ AHA Task Force at 24.

¹⁷ Symbol Technologies at 2.

requests are granted, even newly designed equipment will be permitted to operate in these existing bands, and medical telemetry operations can continue on in the currently allocated frequencies without limitation into the future. Final Analysis supports the approval of the grandfathering requests as a means to ensure efficient frequency use. However, as explained further below, these requests completely undercut the medical telemetry parties' arguments with respect to the need to move to new spectrum to avoid interference as well as the amount of spectrum supposedly required.

2. The Record Establishes That Potential Interference In Existing Spectrum Is Not An Insurmountable Problem

The new request for continued and indefinite use of existing spectrum incontrovertibly demonstrates that the problem of potential interference in these bands is not nearly as dire as the medical telemetry parties have led the Commission and the public to believe. The very fact that the medical telemetry parties would contemplate indefinite continued use of the Part 15 and Part 90 frequencies indicates that potential interference problems are not intolerable. In fact, the AHA Task Force says:

Use of these existing devices should be authorized until the health care provider decides that they no longer are in acceptable working order or until they are being operated in an area where they are subject to objectionable interference from other, primary, licensed users.¹⁸

First and foremost, it is clear from this proposal that the medical telemetry parties do not consider the *potential* of interference in the current bands to be such a problem that the bands are not usable. Second, it is clear that the AHA Task Force believes that health care providers are willing to utilize medical telemetry equipment operating in the current bands until such time as

¹⁸ AHA at 23.

objectionable interference occurs.¹⁹ Therefore, the Commission cannot reasonably assume that Part 15 and Part 90 frequencies are no longer compatible with medical telemetry applications. To the extent that the Commission's proposal to allocate new spectrum to WMTS is based on such an assumption, it is obviously erroneous. Thus, the entire rationale for granting any new allocation to WMTS must be revisited. No additional spectrum should be allocated unless and until the AHA Task Force can demonstrate that it cannot abide the potential interference in the Part 15 and Part 90 bands, especially as ameliorated through the preventative measures that would be implemented through efficient frequency coordination.

In fact, other commenters have stated that sharing is feasible in the current bands. Although the users of the few frequencies in the 450-460 MHz band used for medical telemetry must vacate those frequencies to permit resolution of the longstanding refarming issue, a number of low power channels will still be available in the 460-470 MHz band. Motorola supports continued use of existing medical telemetry equipment on a secondary basis on those frequencies after the transition period.²⁰ The Land Mobile Communications Council ("LMCC") also indicates that sharing is possible in the 460-470 MHz band on low power channels.²¹

Numerous medical telemetry parties request "grandfathering" of Part 15 devices, so that existing devices may remain indefinitely in the TV bands. For example, GE Marquette Medical

¹⁹ It should be noted that the AHA Task Force's proposal here that the health care providers be given the discretion to determine when interference becomes objectionable is contradictory to the AHA Task Force's apparent agreement elsewhere in its comments to the appointment of a frequency coordinator. Presumably, effective central frequency coordination will make such ad hoc decisions by individual health care providers unnecessary.

²⁰ Motorola at 5.

²¹ LMCC at 9. It also appears that the Commission has not taken into account the possible continued use by medical telemetry of the low power offset channels that have been proposed by LMCC, but which have not yet been approved. See Notice at 3, note 6. (continued...)

Systems (“GE Marquette”), a medical telemetry device manufacturer, comments that it supports indefinite use of Part 15 devices designed before the transition date.²²

The problem that precludes use of many such frequencies for medical telemetry at any given location is instead the interference that would be received from television stations operating on such frequencies. But in the limited number of instances in which Channel 7-46 medical telemetry uses will be necessary, that problem is fully manageable.²³ (Emphasis added.)

GE Marquette notes that no “responsible” manufacturer or health care provider will install a medical telemetry system involving a known frequency conflict. Before installing medical telemetry equipment GE Marquette always conducts frequency conflict analyses and says:

It has been GE Marquette’s experience thus far that there have always been non-conflicting frequencies in the Channel 7-46 range that are available for use at the sites of its proposed installations.²⁴ (Emphasis added.)

GE Marquette concludes that the combination of a primary allocation for WMTS at 608-614 MHz and the establishment by a frequency coordinator of a new medical telemetry database including new or changed DTV, LPTV and television translator stations and available on the Internet “will essentially eliminate the possibility of future frequency conflicts between medical telemetry and television uses.”²⁵

(...continued)

Final Analysis urges expeditious approval of the low power plan so that the conditions under which medical telemetry may use these channels can be clarified.

²² GE Marquette Medical Systems, Inc. at 5.

²³ GE Marquette at 12-13.

²⁴ GE Marquette at 13.

²⁵ *Id.* at iii and 14-15.

Several parties indicate that, in fact, a large part of the historical problem with medical telemetry allocations has been the lack of effective frequency coordination for unlicensed operations, and that the relatively simple steps of appointing a frequency coordinator and establishing a database of users will significantly ameliorate any potential interference problems in current frequencies.²⁶ Indeed, the unfortunate incident in Texas which gave rise to the AHA Task Force analysis and request for a primary allocation resulted, not from the lack of spectrum or from the fact that the spectrum was being utilized on a secondary basis, but because of the lack of effective frequency coordination.²⁷ Thus, it is absolutely critical here that the Commission not establish an unfortunate precedent of granting primary allocations in new spectrum solely to guarantee sensitive services freedom from interference, when frequency coordination measures have not even been tried. Establishment of such effective frequency coordination measures in medical telemetry's current spectrum will be the most important result of this proceeding.

Final Analysis recognizes that medical telemetry users may have some legitimate need for access to spectrum allocated to WMTS on a primary basis for use in certain urban locations where frequency conflicts in current spectrum are unavoidable due to a large number of health care facilities. However, the record clearly indicates that this need may be both less acute and less extensive than the medical telemetry parties have previously represented. To the extent that potential interference largely can be avoided in current spectrum, the need to have other spectrum allocated on a primary basis is significantly reduced. Final Analysis respectfully

²⁶ See, e.g., Motorola at 7, GE Marquette at 15, PCIA at 4.

²⁷ Indeed, the Commission has referred to the fact that steps already have been taken to ensure that the establishment of other new DTV operations do not create similar unfortunate problems. Notice at para. 9.

suggests that the Commission implement prudent frequency coordination measures as soon as possible in all current spectrum bands, including, as LMCC suggests, the establishment of a database of medical telemetry users in the 450-470 MHz bands to facilitate implementation of the refarming plan in those bands. Only after such measures are implemented will the Commission realistically be able to assess the actual potential for interference in these bands and the extent of the requirement for a primary allocation in other spectrum.

3. The Record Establishes That The Amount of New Spectrum Required Has Been Greatly Overstated

It is plain that by requesting that existing bands be grandfathered, the medical telemetry parties are trying to maintain maximum flexibility to continue to utilize *both* the substantial amount of existing frequencies, including over 200 MHz of spectrum in the ISM bands, *as well as* the full 14 MHz of proposed new spectrum. Thus, the medical telemetry parties now want even more than the total 14 MHz the Commission has proposed, which was already greater than the 12 MHz the AHA Task Force had originally said was needed in the long run. This goes in the wrong direction.

The AHA Task Force indicates that the grandfathering request has been made to accommodate the Commission's proposed two year transition period, which is far shorter than the five year period that the AHA Task Force says is needed. The AHA Task Force also claims that flexibility is necessary if incumbent government users take several years to migrate out of the upper frequency bands that the medical telemetry parties have requested. These arguments are disingenuous.

First, AHA's original justification for a transition period was that manufacturers would require approximately three to four years to bring new WMTS devices to the market.²⁸ However, as Motorola has pointed out, the AHA Task Force itself has noted that equipment for use in the 608-614 MHz band, the band most likely to be allocated to WMTS for current use, is already available.²⁹ Thus, with respect to the 608-614 MHz band, virtually no transition is necessary.³⁰

Second, as Motorola observes, the AHA Task Force's rationale for a longer transition has less to do with the availability of WMTS equipment than with a desire to further forestall licensing on the high power channels in the 460-470 MHz bands pursuant to the refarming proceeding due to fear of interference to medical telemetry equipment operating in those bands on a secondary basis.³¹ At the root of this problem is the issue that, as AHA states, the "health care industry simply cannot afford to replace the myriad of existing wireless telemetry devices until they have outlived their usefulness."³² Thus, the AHA Task Force apparently wants to secure the opportunity to continue to utilize equipment operating in existing spectrum for a period long enough to permit most health care facilities to afford the transition, and indeed in many cases indefinitely, and to ensure a lack of interference to these secondary operations from new high powered narrowband operations in the 450-470 MHz bands in the meantime. However, Motorola, PCIA and others have offered to work out ways of smoothing the transition,

²⁸ AHA at 22.

²⁹ Motorola at 4 (citing AHA quoted in the Notice at para. 15). *See also* PCIA at 6-7 (citing AHA Report at 13).

³⁰ A transition to frequencies around 1.4 GHz may be longer, but any such frequencies would be allocated to WMTS for *future* uses anyway.

³¹ Motorola at 4.

³² AHA at 23.

including through use of databases and frequency coordination and movement of medical telemetry operations to the designated low power channels that will remain after refarming.

Thus, the transition argument is largely a false issue. The AHA Task Force offer to accommodate a shorter transition period in return for indefinite grandfathering in current secondary allocations, amounts to no more than an augmentation of the AHA Task Force spectrum request. At the very least, if grandfathering is permitted, the Commission must reduce any proposed new allocation for WMTS by the amount of existing spectrum that reasonably may be expected to continue to be used for medical telemetry indefinitely. Thus, not only must the medical telemetry parties provide a more realistic picture of their actual use and total spectrum requirements, but they also must be made to accept more efficient continued use of their current spectrum allocations as a solution for at least a part of their overall spectrum needs. Consequently, before any additional allocation is approved, the medical telemetry parties must be required to supply the Commission with factual information on this issue.

Final Analysis supports the AHA Task Force's request that it be allowed to continue to use existing spectrum in the Part 15 and Part 90 bands. Implementation of the transitions required to implement the refarming proceeding, combined with effective frequency management, will vitiate many of the problems with current secondary allocations that apparently have led to AHA's request for new spectrum. However, the medical telemetry parties should not be allowed to have it both ways. If current secondary allocations can be made to work without a threat of substantial interference, the request for a total of 6 MHz of new primary spectrum for "current needs" either should be reassessed or should be acknowledged to be granted on the basis of public policy interests rather than on demonstrated need.

III. GRANT OF A NEW PRIMARY OR CO-PRIMARY ALLOCATION IN THE 608-614 MHZ BAND ALONG WITH CONTINUED SECONDARY USE OF EXISTING BANDS WILL PROVIDE WMTS WITH MORE THAN ADEQUATE SPECTRUM FOR THE FORESEEABLE FUTURE

A. The Record Supports Allocation of Some Portion of the 608-614 MHz Band to WMTS on a Primary or Co-Primary Basis

Virtually all of the commenters agree that the 608-614 MHz band is readily available for allocation, without any conflicts, to WMTS.³³ For example, AHA states that the 608-614 MHz band offers not only the advantage of low background noise due to its reservation for radio astronomy, but numerous vendors will be able to rapidly develop equipment for this band.³⁴ AMTA and ITT Research Institute also note that equipment will be readily available for WMTS uses in the 608-614 MHz band.³⁵

Allocation of up to 6 MHz of spectrum to WMTS in this band, in combination with approval of the requested grandfathering of existing secondary allocations, including the ISM bands as discussed above, should provide WMTS with more than adequate spectrum to meet its current and reasonably anticipated needs.³⁶ Final Analysis notes that since current medical telemetry operations have access to 500 MHz of bandwidth, it is highly likely that at least 6 MHz is usable within this large frequency range, even after refarming and the implementation of DTV. Thus, even the allocation of an entire 6 MHz of spectrum in the 608-614 MHz band likely should be viewed as an allocation for future growth. Therefore, to the extent that the Commission finds that the record demonstrates that the grant of a new co-primary allocation is necessary to avoid

³³ See AHA Task Force at 8,11; *see also* VitalCom at 7, 9; *see also* MedStar at 7-8; *see also* AMTA at 4; *see also* GE Marquette at 3; *see also* ITT Research Institute at 1-2; *see also* Motorola 3-4; *see generally* ORBCOMM.

³⁴ AHA Task Force at 8 (stating that numerous component vendors have experience building devices operating in this band).

³⁵ AMTA at 4.

³⁶ Motorola at 3 (supporting the allocation of the 608-614 MHz band for primary WMTS use).

harmful interference to medical telemetry and accommodate growth in current applications, Final Analysis supports the allocation of frequencies in the 608-614 MHz spectrum band to WMTS. Final Analysis expresses no opinion as to the total amount of spectrum in this band that should be allocated to WMTS.

Approval of this allocation also will facilitate resolution of the refarming proceeding as well as ensure that the implementation of digital TV can proceed without the risk of harmful interference to medical telemetry applications. Consequently, allocation of spectrum in the 608-614 MHz bands, in combination with approval of grandfathered use of existing spectrum including in the ISM bands, use of the low power set aside channels in the land mobile frequencies, and the establishment of frequency coordination mechanisms, will resolve the immediate urgencies surrounding medical telemetry operations and provide additional spectrum for service growth. With this action, there is clearly no requirement to allocate additional and unnecessary spectrum for WMTS in the bands around 1.4 GHz.³⁷

B. The Current Record Does Not Support The Allocation of Any New Spectrum In Addition to the 608-614 MHz Band

Final Analysis respectfully submits that the record does not justify additional allocations beyond the frequencies in the 608–614 MHz band. The comments confirm that the additional spectrum requirements so far put forth by the medical telemetry parties are purely speculative and unsupported. The Commission simply has no reasonable basis for granting additional spectrum to WMTS in any bands other than the 608-614 MHz band.

³⁷ VitalCom, Inc. at 4, itself notes that the AHA Task Force recommended an allocation of 6 MHz be made available for immediate use, with an additional allocation of at least 6 MHz over the next ten years. (emphasis added). Thus, even the medical telemetry industry's comments underscore the conclusion that there is no rush to allocate spectrum outside of 608-614 MHz.

This is especially true in the current environment when spectrum resources are increasingly scarce. This problem recently has been underscored by the enactment of the National Defense Authorization Act for Fiscal Year 2000, which, among other things, includes provisions which reverse and/or require the reassessment of certain earlier legislative initiatives to reallocate government spectrum for commercial use.³⁸ Effective spectrum planning and efficient spectrum use are imperative to ensure that the public interest may be served by the implementation of all valid proposed uses.

It is in this context that PCIA insists, and Final Analysis agrees, that it is critical for the healthcare industry to demonstrate its actual spectrum requirements. Similarly, the AMTA comments that “it is imperative that the FCC scrutinize carefully all spectrum requirements, particularly those such as WMTS that combine a very specialized, narrow eligibility provision and highly limited areas of operation per system with a relatively substantial spectrum demand.”³⁹

Consequently, the Commission should defer any additional allocations to WMTS until such time as more complete facts are available concerning actual industry demand and use. In fact, the appointment of a frequency coordinator should help significantly in the analysis of medical telemetry spectrum demands, by determining the actual usage of not only the various sizes of facilities, but the different types of devices and their operating bandwidth at each

³⁸ Pub. L. No. 106-65 (1999) (reassigning to the Federal Government the 1385-1390 MHz spectrum band which had been recommended for reallocation for commercial use and which originally had been targeted by the AHA Task Force for medical telemetry allocations).

³⁹ AMTA at n.6.

location.⁴⁰ Any further allocation decisions should await the input of actual market demand and usage data as well as coordination results from this process.

Notably, none of the medical telemetry commenters address either the importance of spectral efficiency or how they will seek to maximize an allocation through efficient use.⁴¹ Any further inquiry from the Commission must necessarily demand comments from the medical telemetry industry as to how they plan to use spectrum efficiently. Thus, in addition to the new efficiencies that can be achieved through effective spectrum coordination, the Commission should ensure that the industry itself is doing everything possible to design, implement and use only that medical telemetry equipment that is most spectrally efficient.

When evaluating the stated demands of the medical telemetry industry against the expressed interest in some of the same spectrum by other parties, including the NVNG MSS industry, the Commission must bear in mind the extreme differences in the justifications offered for spectrum requirements. The medical telemetry industry has offered only unverifiable and general anecdotal information, bolstered with the emotional appeal of the need for health care

⁴⁰ In any event, the Commission should defer allocating the 1.4 GHz band because, under the Omnibus Budget Reconciliation Act of 1993, this band is not scheduled to be allocated until 2006. As discussed in Final Analysis' comments, the Commission has not demonstrated that prematurely removing this spectrum from reserve would not be arbitrary and capricious. Final Analysis at 25-26.

⁴¹ For example, Datex-Ohmeda Division, Instrumentarium Corp. comments that requirements for 30 MHz of bandwidth for medical telemetry operations at some hospitals may be foreseen in the future, arguing that 100 kHz channels, with 150 kHz guard bands between each channel, are required for 200 simultaneously monitored EKG patients. This sort of bandwidth estimate is completely out of step with the far more spectrally efficient designs referenced by other manufacturers and it even contradicts the bandwidth assumption used by the AHA Task Force. At the very least, it indicates that the Commission must mandate that WMTS equipment meet strict efficiency standards, and that medical telemetry applications consider other operational techniques, such as coordinated time division use of spectrum, particularly within large medical facilities, to ensure conservation of frequency spectrum. In any event, there is absolutely no empirical support for Instrumentarium's assertions, and consequently their comments should not be relied upon for any allocation decisions in this proceeding.

equipment. However, the Commission cannot make reasoned allocation decisions simply on the basis of the arguable emotional appeal of alternative applications. The Commission's allocation decisions must be grounded in empirical analyses of actual spectrum requirements and usage characteristics.

In this case, the very general and unsupported appeal of the medical telemetry parties is in stark contrast to the extensive factual research and testing conducted by other parties interested in the same spectrum targeted by the medical telemetry parties, including the NVNG MSS industry. As detailed in Final Analysis's comments, NVNG MSS needs are clearly documented, are acknowledged by the FCC and U.S. government, and are the product of intensive spectrum usage studies performed by World Radio Conference ("WRC") Working Groups.⁴² As further referenced in ORBCOMM's comments, extensive preparations have been made by the NVNG MSS industry in order to obtain additional feeder link allocations at the upcoming WRC proceedings.⁴³

Thus, before granting one interest group a primary allocation that would effectively deprive another interest group of access to the same spectrum, the Commission must demand equally rigorous spectrum use analysis. Specifically, the Commission should consider allocating additional spectrum in other bands only if and when a demonstration is made on the record that the needs of WMTS cannot be met from existing spectrum allocations or the 608-614 MHz band. Any demonstration of need for additional spectrum must be based on actual usage analyses, not speculative estimates. If actual usage analyses demonstrate that WMTS needs

⁴² See generally Final Analysis at 13-14 (discussing the planning activities of the ITU resulting in the conclusion that NVNG MSS should be allocated the 1390-1393 MHz and the 1429-1432 MHz bands).

⁴³ ORBCOMM at 2-4.

additional spectrum, the amount of additional spectrum subsequently allocated for WMTS should not exceed the amount of spectrum for which the actual usage analyses demonstrate a current need. Similarly, if the Commission finds that additional allocations for future growth are justified on public policy grounds, any such allocation should be based on some realistic market analysis.

IV. IN THE EVENT THAT WMTS EVENTUALLY DEMONSTRATES AN ACTUAL NEED FOR ADDITIONAL SPECTRUM, ADDITIONAL SPECTRUM SHOULD BE ALLOCATED TO WMTS ONLY IN THE 1394-1400 MHZ AND 1427-1429 MHZ BANDS

A. The Commission Must First Attempt To Satisfy Any Additional Justified Spectrum Requirements For WMTS In The 1394-1400 GHz Band

If the prerequisites for additional WMTS allocations outlined above are met, the Commission must first consider allocating frequencies in the 1394-1400 MHz band. This is consistent with the AHA Task Force's request. Additionally, as the AHA Task Force explained in its comments, the 1394-1400 MHz band is a particularly appropriate option for allocation because it would not require WMTS to share spectrum with other existing and potential commercial users, including NVNG MSS.⁴⁴ In fact, the 1394-1400 MHz band would result in fewer conflicts between WMTS and other existing and potential users, including NVNG MSS, than any other band that the AHA Task Force has proposed.⁴⁵ The ITT Research Institute notes that the 1394-1400 MHz band offers additional advantages, including the availability of "off-the-shelf" technology for WMTS applications and the benefit of contiguous bandwidth for long-term

⁴⁴ AHA Task Force at 11-12 (proposing allocation of 1394-1400 MHz band as an alternative to FCC proposed options).

⁴⁵ Use of the 608-614 MHz band still poses coordination requirements to avoid use of particular radio astronomy channels in close physical proximity to a radio astronomy facility using those channels.

WMTS requirements.⁴⁶ AHA, ORBCOMM and VitalCom also support consideration of the 1394-1400 MHz band for allocation for WMTS.⁴⁷ They point out that this proposal not only removes the need to share spectrum with NVNG MSS, it also leaves room for an allocation to PLMR services near 1.4 GHz. Thus, the record indicates that additional allocations to WMTS in the 1394-1400 MHz band would have minimal adverse impact on other parties' interests. However, it must be recognized that the record does not justify the allocation of all or part of this spectrum to WMTS at this time.

B. Any Additional WMTS Allocation Must Be Justified By Demonstrated Need For Bi-Directional Capability And Must Be Satisfied in Either The 1427-1429 MHz Bands or the 1432-1435 MHz Bands.

1. No Demonstration Has Yet Been Made That Bi-Directional Capability Is Required

In addition to the 1394-1400 MHz band, the AHA Task Force asks the Commission to allocate the 1427-1429 MHz band for WMTS based on its "preference for non-contiguous (split) frequencies in the upper band allocation in order to facilitate two-way communications on WMTS systems."⁴⁸ However, there has been no demonstration on the record in this proceeding that bi-directional communications are necessary for WMTS operations. Moreover, there is no current need for additional spectrum to facilitate bi-directional communications, because apparently there are no existing WMTS applications that utilize bi-directional communications in other than the ISM bands.⁴⁹ Likewise, there will not be a need for additional spectrum to facilitate bi-directional communications in the near future, because new applications and WMTS

⁴⁶ ITT Research Institute at 2.

⁴⁷ See ORBCOMM at 8-9; VitalCom at 9-10; AHA at 11-12.

⁴⁸ AHA Task Force at 11.

⁴⁹ VitalCom at 7 notes that two-way communications for command and control telemetry applications currently are performed using the ISM bands. It does not explain why two-way communications using the ISM bands could not continue.

equipment utilizing bi-directional communications must first be developed. Even if bi-directional communications were necessary for WMTS operations, there has been no demonstration that non-contiguous frequencies near the 1.4 GHz should be allocated for WMTS to facilitate bi-directional operations.⁵⁰ Therefore, Final Analysis submits that there is no basis for allocation of the 1427-1429 MHz band for WMTS at this time.

2. If Bi-Directional Requirements Are Demonstrated And Cannot Be Accommodated In Other Spectrum The Commission Should Consider Allocations in the 1427-1429 MHz Band

If and only if it is later demonstrated that there is a need for bi-directional communications on WMTS systems, and that this need cannot be satisfied within existing spectrum allocations including the ISM bands, in the 608-614 MHz band, and the 1394-1400 MHz band, then the Commission should consider allocating the 1427-1429 MHz band for WMTS. Before the Commission can allocate the 1427-1429 MHz band for WMTS, however, it must resolve the issue of possible interference with Itron, an existing secondary licensee for a nationwide wireless meter reading service on frequencies at 1427-1432 MHz. Itron claims in its comments that, “it appears that the medical telemetry service cannot be accommodated within the 1427-1432 MHz band without jeopardizing the continued operations of meter-reading services.”⁵¹ The Commission must first determine whether, and to what extent, Itron’s meter-reading services and WMTS operations would interfere with each other in the 1427-1432 MHz band. In the event of such interference, the Commission must then determine whether Itron, as a secondary licensee, must accept any potential interference from WMTS without causing interference to WMTS, or whether it is feasible to move Itron to another spectrum band so that

⁵⁰ See, e.g., Itron at 3 (“[I]t is unclear whether medical telemetry users even require access to the 1427-1432 MHz band in order to satisfy their needs.”)

⁵¹ *Id.*

WMTS can use the 1427-1429 MHz band. However, Final Analysis notes that Itron has been operating on a secondary basis in government spectrum currently in reserve for reallocation to commercial uses in 2006.⁵² Thus, it has assumed the risk that allocations eventually would be made in the same bands to other commercial users, as well as the obligation to accept interference from primary users in the meantime. To allow such a secondary user to “bootstrap” itself into a *de facto* primary use on the basis of its installed investment is not an appropriate use of the Commission’s spectrum allocation processes. It also unfairly penalizes parties such as the NVNG MSS industry, which have invested instead in the significant testing, coordination and other efforts required to obtain a primary allocation from the outset.

In the event the Commission determines that it is necessary to move Itron, it should be moved out of all of the frequencies occupied in the entire 1427-1432 band. This will permit the implementation of the compromise proposed by both Final Analysis, the AHA Task Force, and several medical telemetry equipment manufacturers that would avoid the necessity for WMTS and NVNG MSS to compete for the same spectrum. Specifically, WMTS should be allocated frequencies in only the 1427-1429 MHz band, leaving the 1429-1432 MHz band for allocation to NVNG MSS. It should be noted that the reason AHA, MedStar, and VitalCom offered 1394-1400 MHz and 1427-1429 MHz only as an alternative compromise proposal, stating a preference for 1429-1432 MHz, was because they mistakenly believed Itron only operated in 2 MHz within the 1427-1429 MHz band. In fact, Itron actually operates over the entire 5 MHz in the 1427-1432 MHz band. Therefore, if Itron is moved, there is no reason remaining to put WMTS in the NVNG MSS feeder downlink band, an action that would significantly harm the NVNG MSS industry.

⁵² According to the Commission’s database, Itron’s nationwide license expires in 2004.

3. In the Event That Justified WMTS Requirements Cannot Be Accommodated In The 1427-1429 MHz Band The Commission Should Consider Allocations In The 1432-1435 MHz Band

In the event that WMTS and Itron cannot both operate in the 1427-1432 MHz band and Itron cannot be relocated to another spectrum band, then none of the 1427-1432 MHz band is available to medical telemetry. In that case, assuming compelling evidence for bi-directional capability outside the ISM bands is placed on the record, the Commission should consider allocating frequencies in the 1432-1435 MHz band for WMTS bi-directional applications. Notably, the 1432-1435 MHz band was not reclaimed for exclusive federal government use on a primary basis by the Department of Defense in the National Defense Authorization Act for Fiscal Year 2000.⁵³

Moreover, as Final Analysis has demonstrated in its comments, the 1432-1435 MHz band can be allocated for WMTS without auction, because the plain meaning of the legislative language in the Balanced Budget Act of 1997 effecting the reallocation of this spectrum must be read to require allocation pursuant to *all* of the provisions of Section 309(j) of the Communications Act of 1934, as amended, including exemptions from competitive bidding for public services such as medical telemetry.⁵⁴ Consequently, the 1432-1435 MHz band also could be considered for allocation for WMTS if necessary.

⁵³ See S. 1059, 106th Cong., 1st Sess. § 156(c) (1999); *see also* AHA Task Force at 7.

⁵⁴ See Final Analysis at 21-25.

V. THE RECORD IS CLEAR THAT NO ALLOCATIONS TO WMTS MAY BE MADE IN THE 1390-1393 MHZ AND 1429-1432 MHZ BANDS

A. Sharing Between WMTS And NVNG MSS Is Difficult In The 1390-1393 MHz and Is Not Possible In The 1429-1432 MHz Bands

The record is abundantly clear that the Commission should not consider allocating any spectrum to WMTS that overlaps with the bands around 1.4 GHz that have been targeted for NVNG MSS feeder link spectrum. Due to the substantial risks of interference, spectrum that may be used by NVNG MSS systems for downlink feeder links cannot be shared with WMTS. Although Final Analysis is willing to further pursue the possibility of sharing spectrum that may be used for NVNG MSS uplink feederlinks, the medical telemetry parties clearly view the rare but unpredictable potential for short term interference due to atmospheric “ducting” in the L Bands to be unacceptable. The comments of the AHA Task Force,⁵⁵ ITT Research Institute,⁵⁶ MedStar,⁵⁷ Spacelabs Medical,⁵⁸ and VitalCom⁵⁹ all recognize this. ORBCOMM is the only party that has suggested that these bands, particularly the 1429-1432 MHz bands targeted for downlink feeder links, can be shared with WMTS.⁶⁰ ORBCOMM is mistaken in its assumption. It has not played an active role in the technical analyses conducted pursuant to sharing studies for

⁵⁵ AHA Task Force at 9 (recognizing that sharing between NVNG MSS and WMTS in the 1390-1393 MHz and 1429-1432 MHz bands is not feasible).

⁵⁶ ITT Research Institute at 3 (noting that NVNG MSS systems could cause EMI to WMTS in the 1390-1393 MHz and 1429-1432 MHz bands).

⁵⁷ MedStar at 8 (stating that sharing between NVNG MSS and WMTS in the 1390-1393 MHz and 1429-1432 MHz bands is not feasible).

⁵⁸ Spacelabs Medical at 5-6 (explaining that NVNG MSS systems will likely interfere with WMTS operations).

⁵⁹ VitalCom at 8 (recognizing that the 1390-1393 MHz and 1429-1432 MHz bands cannot be shared between NVNG MSS and WMTS).

⁶⁰ See ORBCOMM at 4-8 (claiming that sharing between WMTS and NVNG MSS under FCC Options 1 and 2 is possible).

the use of these bands by NVNG MSS, and has apparently overlooked the constraints imposed on the 1429-1432 MHz by adjacent band users.

Specifically, with respect to the 1429-1432 MHz bands, ORBCOMM claims that if NVNG MSS feeder downlinks use spread spectrum modulation schemes, then the resulting low power at the surface of the Earth would not radiate inside buildings and thus would not interfere with WMTS operations.⁶¹ Unfortunately, NVNG MSS spread spectrum operations in this band are not allowable, because using spread spectrum modulation for NVNG MSS feeder downlinks in the 1429-1432 MHz band would cause out-of-band emissions that would interfere with radio astronomy operations in the 1400-1427 MHz band and would be in violation of the approved ITU criteria.⁶² Thus, using spread-spectrum modulation schemes for NVNG MSS feeder downlinks in the 1429-1432 MHz band is not possible. In any event, unless the Commission moves Itron to another band, WMTS cannot operate anywhere in the 1427-1432 MHz band without interference from Itron.

With respect to ORBCOMM's claim that NVNG MSS feeder uplinks in the 1390-1393 MHz band can be "notched" to avoid harmful interference to hospitals near NVNG MSS gateway sites,⁶³ Final Analysis believes that with additional study it is possible that "notching" would prevent interference between NVNG MSS and WMTS. In this case, however, it is the medical telemetry community that believes shared use of the band is not feasible. The AHA Task Force is concerned about potential interference from possible signal "ducting" which could occur under certain meteorological conditions from NVNG MSS transmissions aimed at the

⁶¹ *Id.* at 6.

⁶² ITU Recommendation RA. 769-1

⁶³ ORBCOMM at 6-7.

horizon, and therefore they have chosen to rule out WMTS operations in NVNG MSS feeder uplink bands.⁶⁴

B. The Abundant Demonstration Made By NVNG MSS Of The Requirement For Feeder Link Spectrum At 1390-1393 MHz and 1429-1432 MHz Must Be Given Priority Over The Complete Lack Of Demonstrated Need By WMTS For This Particular Spectrum

The record clearly and undeniably demonstrates that spectrum in the 1390-1393 MHz and 1429-1432 MHz bands is required to meet NVNG MSS's need for additional feeder link spectrum.⁶⁵ ORBCOMM also asserts that the need for additional feeder link spectrum for NVNG MSS is now established beyond dispute, and that the only bands that are suitable and available for global allocation for NVNG MSS are the 1390-1393 MHz band for feeder uplinks and the 1429-1432 MHz band for feeder downlinks.⁶⁶ As described in detail in Final Analysis's comments, these two bands were identified by the NVNG MSS industry and the United States only after thorough evaluations of the availability and suitability of various bands below 1 GHz performed as part of extensive efforts in the WRC process to obtain additional global allocations for feeder link spectrum for NVNG MSS. Any allocation of this spectrum to any other application, particularly an exclusive primary allocation such as is requested by the medical telemetry parties, would seriously undermine the longstanding and nearly completed efforts of the United States government and the NVNG MSS industry to secure international allocation of these frequencies for feeder link use. Given the demonstrated concern of medical telemetry about potential interference to their operations from NVNG MSS feeder link transmissions a

⁶⁴ AHA Task Force at 10.

⁶⁵ Final Analysis at 7-15 (demonstrating that the nascent NVNG MSS industry has a critical need for additional spectrum, i.e., the 1390-1393 MHz and 1429-1432 MHz bands).

⁶⁶ ORBCOMM at 3-4.

domestic allocation to medical telemetry in these bands would preclude a future domestic allocation of these bands to NVNG MSS.

In contrast, the medical telemetry parties have offered absolutely no objectively verifiable need for the allocation of any spectrum in these bands generally. Much less have they offered any rationale for why the specific bands targeted for NVNG MSS feeder links in particular must be allocated to WMTS. To the extent that the medical telemetry parties have based their request for spectrum in the 1429-1432 MHz band on the belief that it will avoid the issue of interfering with or displacing Itron in the 1427-1429 MHz bands, they are mistaken. Itron operates across the full 1427-1432 MHz band, and WMTS would be affected by Itron's operations in either portion of the band. Thus, there is no logical basis for an allocation of WMTS in the 1429-1432 MHz band.

Also, as described above, the stated requirements are based on the inclusion of additional spectrum for bi-directional operations. Before the Commission ever considers an allocation to WMTS in either the 1390-1400 MHz or 1429-1432 MHz bands, the medical telemetry parties should be required to demonstrate actual requirements for bi-directional operations, including specified bandwidth requirements, and must also demonstrate that no other spectrum is available to accommodate the requirement such as the ISM bands. Further, any allocation to WMTS in these bands for bi-directional operations also presumes that other companion spectrum, such as frequencies in the 1394-1400 MHz bands, will be allocated as well. As Final Analysis has argued above, the medical telemetry parties have not yet justified any allocations in that spectrum either.

Accordingly, there is absolutely no basis for an allocation of spectrum to WMTS in the 1390-1393 MHz and 1429-1432 MHz bands for WMTS. Final Analysis respectfully requests the

Commission to confirm that, in the event that any additional WMTS allocations are required for bi-directional operations, the interests of the NVNG MSS in this spectrum have priority, and that WMTS must be accommodated elsewhere.

VI. CONCLUSION

For the reasons stated, Final Analysis respectfully requests that the Commission adopt the allocations, service rules and operating conditions for the Wireless Medical Telemetry Service that Final Analysis has proposed herein.

Respectfully submitted,

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